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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/543,235	04/05/2000	John C. Krumm	MCS-008-00	6912

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EXAMINER

LAU, TUNG S

ART UNIT

PAPER NUMBER

2863

DATE MAILED: 07/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/543,235

Applicant(s)

KRUMM, JOHN C.

Examiner

Tung S Lau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 12-17, 19 and 20 is/are rejected.
- 7) ☒ Claim(s) 2-11, 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 12, 19, 13, 14, 15, 16, 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Day et al. (U.S. Patent 4,639,878).

Regarding claim 1:

Day discloses a method of determining a relative position and orientation between a base camera and a non-base camera, including measuring a path of an object with the base camera in a base coordinate frame (Col. 3-4, Lines 55-60); measuring the object path with the non base camera in a non-base coordinate frame (Col. 3-4, Lines 55-60); calculating transformation based on the object path; applying the transformation parameter to the object path measured by the non-base camera such that the object path measured by the non-based camera is expressed in the base coordinate frame (Col. 4-5, Lines 61-22).

Regarding claim 12:

Day discloses a method of measuring a relative pose between two camera comprising selecting a time offset value corresponding to a time shift between the two cameras and calculating a transformation parameter using the time offset value (Col. 3-4, Lines 55-58), the transformation parameter capable of

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transforming data in a coordinate frame of one of the two cameras into a coordinate frame of the other of the two cameras so as to obtain the relative pose (Col. 4-5, Lines 43-22).

Regarding claim 19:

Day discloses a method of calibrating a first and second range camera comprising measuring a path of an object with the first range camera to generate a first observed object path (Col. 3-4, Lines 54-43); measuring the object path with the second range camera to generate a second observed object path (Col. 3-4, Lines 54-58), and calculating a transformation parameter that causes the first observed object path to approximately overlap with the second observed object path so as to determine a relative pose between the first and second range cameras (Col. 4-5, Lines 60-32).

Regarding claims 13, 14, 15, 16, 20:

Day discloses the time offset value data (Col. 10, Lines 52-64), the measurements by the two camera of a path of an object (fig.3-5), the transformation parameter is calculated of each the time offset and error function (Col. 10, Lines 52-64 ,Col. 12, Lines 6-24).

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill

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in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

a. Claim 17 rejected under 35 U.S.C. 103(a) as being unpatentable over Day et al. (U.S. Patent 4,639,878) in view of Huang (U.S. Patent 4,945,493).

Day discloses a method including the subject matter discussed above except the use of least squares solution; Huang discloses the use of least squares solution in order to solve simultaneous equations to have a result quickly (Col. 5, Lines 32-45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Day to have the use of least squares solution taught by Huang in order in order to solve simultaneous equations to have a result quickly (Col. 5, Lines 32-45).

### ***Claim Objections***

3. Claims 2-11 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all the limitation of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance: prior art fail to teach the moving is a person, matching data measured between the cameras, least median of square technique.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung S Lau whose telephone number is 703-305-3309.

The examiner can normally be reached on M-F 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on 703-308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-5841 for regular communications and 703-308-5841 for After Final communications.


Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

TC2800 RightFAX Telephone Numbers : TC2800 Official Before-Final RightFAX - (703) 872-9318, TC2800 Official After-Final RightFAX - (703) 872-9319

TC2800 Customer Service RightFAX - (703) 872-9317

TL

July 11, 2003

  
John Barlow  
Supervisory Patent Examiner  
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